



PROCEEDINGS
OF THE
PACIFIC COAST ENTOMOLOGICAL SOCIETY

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No. 4

NINETY-FIFTH MEETING

The ninety-fifth meeting of the Society was held on Saturday evening, September 13, 1924, in room 10 of the State Agricultural Department, Ferry Building, San Francisco.

President Van Dyke in the chair. Minutes of the preceding meeting were read and approved.

The following nine members were in attendance: E. C. Van Dyke, George F. Ferris, Vasco M. Tanner, Grant V. Wallace, Charles L. Fox, Mrs. E. C. Van Dyke, E. P. Van Duzee, Lawrence Bruner, and F. E. Blaisdell, Sr.

Six guests were present, as follows: F. S. Stickney, A. C. Davis, F. C. Hadden, George R. Wilson, Fred C. Brosius, H. E. Bruner and Mrs. Grant Wallace.

After the reading of the treasurer's report, the business of the Society was taken up. Considerable discussion regarding the relation of the Society to the journal, "The Pan-Pacific Entomologist," followed. It was decided that that journal should be the official organ of the Society.

Mr. Van Duzee made a motion that the minutes of the Society be published separately as heretofore for the coming year. Seconded by Professor Ferris. The vote being in the affirmative it was so ordered.

Professor Ferris moved that the present publication committee as it exists, and the status of the journal, be maintained for one year. Seconded by Doctor Van Dyke. The vote being in the affirmative it was so ordered.

Doctor Van Dyke stated that the committee had appointed two regional members, Professor W. W. Henderson for Utah and J. C. Chamberlin for southern California, and asked if this met with the approval of the Society.

Professor Ferris moved that the approval of the regional members be left to the publication committee. Carried.

Being the regular annual meeting the election of officers for the ensuing year was in order and President Van Dyke appointed as a nominating committee the following members: Van Duzee, Fox and Blaisdell. They reported the following ticket: For president, E. C. Van Dyke; for vice-president, G. F. Ferris, and for secretary and treasurer, F. E. Blaisdell, Sr. These officers were then elected by vote of the members.

The following persons were then proposed for membership

and elected: Fred C. Brosius, Alonso C. Davis, F. S. Stickney and F. C. Hadden.

Doctor Blaisdell reported that the last of the unpublished proceedings of the Society for the years 1906 to 1910 had been printed. This had been accomplished through a fund of \$74 recently asked for and quickly and generously subscribed by the members of the Society. A copy of this signature consisting of thirty pages was then presented.

Mr. Fox then reported his summer's work as follows: "I had excellent Hymenoptera collecting during May and June around upper Klamath Lake, southeastern Oregon. Conditions were especially good for collecting in the Eagle Ridge district at an elevation of 4200 feet where I made my headquarters. During May the weather was bright and warm, being an abnormal year, with flowers in full bloom. The following flowering shrubs were attractive to all kinds of insects: *Berberis repens* Lindl. (Oregon Grape), *Prunus demissa* Walp. (Chokecherry), *Prunus emarginata* Walp. and *Rhamnus californica* Esch. (Coffee Berry). Toward the end of June, Crater Lake, National Park was visited and some good Hymenoptera taken, although somewhat too early for much material."

Mr. Fox exhibited two small interesting red (not due to cyanide) and black wasps, *Odynerus margarettellus* Rowhr, stating that according to Doctor T. D. A. Cockerell, to whom the specimens were shown, the species had been recorded before from Colorado only. This species can readily be separated from all other American species by the bright red tergites and legs and the dense black hair on the body.

Mr. Van Duzee told of his and Mr. Martin's trip to Arizona, from July 18 to August 29, 1924. He mentioned visiting Mr. Biedemann and at the request of Doctor Van Dyke gave some account of Mr. Biedemann's work there.

Professor Bruner being called upon said that he no longer did collecting. Being urged he told of his experiences while collecting in the Argentine Republic, South America. Stating that he spent a year there and that it was a land of opposites.

Mr. Wallace spoke of his trip to Yosemite in May. He was followed by Mr. Tanner who spoke of the Utah fauna, and of it's being especially rich in Tenebrionidæ, August being the best month for collecting and July the best for Buprestids.

Doctor Van Dyke reported some facts relating to his summer's work in Plumas County. Mr. Davis being called upon to say something regarding the species of *Pleocoma* stated that three species occur in the southern part of the State; *australis* Fall, *badia* Fall and an undetermined species. *Badia* occurs on Mount Wilson.

Mr. Stickney was requested to say something regarding his work on pests infesting the date palm (*Phœnix dactylifera*). He responded as follows: "The most important pest is a scale, a

Polytona; the next in importance is Marlatt's scale. The former thrives in the heat; the latter is checked by heat. Both are imported pests and occur wherever the date grows. The third pest is a mite, related to the red-spider, an old world form. A minor pest is a bug belonging to the spittle-bug family; it also is an old world form, and at Washington was at first considered as a new genus and species, but on searching the literature it was found that it had been named in 1921. All of the pests of the date palm are imported old world forms. A beetle belonging to the genus *Carpophilus* Steph. infests the sour fruit.

After social discussion the meeting adjourned.

F. E. BLAISDELL, Secretary.

NINETY-SIXTH MEETING

The ninety-sixth meeting of the Society was held in room 10 of the State Agricultural Department, Ferry Building, San Francisco, on Saturday evening, December 13, 1924.

President Van Dyke in the chair. Minutes of the preceding meeting were read and approved.

Thirteen members were present: E. C. Van Dyke, Vasco M. Tanner, Isabel McCracken, F. C. Brosius, George Wilson, Charles E. Woodworth, J. O. Martin, Grant V. Wallace, Helen Sanford, Mrs. F. E. Blaisdell, Charles L. Fox, R. W. Doane and F. E. Blaisdell, Sr.

Two guests were in attendance: Miss L. Ophuls and Eric Walther.

After the reading of the treasurer's report, Mr. Van Duzee spoke on the progress of the PAN-PACIFIC ENTOMOLOGIST, saying that it was necessary to start a drive for subscriptions. That papers for publication were coming in and that enough were on hand for the next two numbers. Doctor Blaisdell reported on the finances of the journal.

Doctor Van Dyke reported that, after having been engaged for a number of years in assembling material, he was now making a study of the tribe Meloini of the Meloidæ, or blister beetles, with the idea of revising that. Preparatory to this, he was re-arranging all of the material in the academy collection, including that of his own collection, in the entire family, this to give him a proper background. As a result of his study he could now state that he believes that the entire family will have to be revamped, the Meloidæ to include two subfamilies as now done. The first, the Meloinæ, will include three tribes: the Mylabrini, an old world group with one American genus and species, *Cordylospasta fulleri* Horn, questionably placed here; the Meloini (the name Meloini replacing that of Lyttini now used), including both old and new world genera; and the Calospastini, restricted to North America and now elevated to tribal rank. The second subfamily, the Zonitinae, would include two tribes as now; the Sitarini and the Zonitini with representatives in both hemispheres. The Calospastini are definitely separated from the other tribes within the Meloinæ by having the tarsal claws toothed, the teeth connate with the main part of the claw and always shorter, the claws in the other tribes being completely cleft, the two portions of equal length and to a certain extent movable upon each other. He believed that he would be able to find other characters which would back his contention with regard to the distinctness of this tribe.

As regards the Meloini as now used, he believed with Doctor George Horn that it was an unnatural group wherein had been placed a miscellaneous assemblage of genera simply because they were wingless. The fact that an insect was wingless, he believed

was of secondary not fundamental importance, the result in most cases of a recent adaptation or degenerative modification along those lines. Of the genera now placed in this tribe, he stated that *Meloe* would have to be placed near *Lytta* Fab. for it was a derivative of that as indicated by Horn; that *Nomaspis sublaevis* Horn which was not congeneric with *Nomaspis parvula* Hald. would also have to be placed even nearer to *Lytta*; that *Nomaspis parvula* be placed in the genus *Henous* Hald. as was done by Champion in the "Biologia Centrali Americana," the genus *Nomaspis* as a consequence abolished and *Henous* which was but a wingless *Epicauta* be placed with its two species near that genus; and the genera *Gynæcomeloe*, *Cysteodemus* and *Megatra* be placed within the tribe Calospastini. As regards *Poreospasta* it was found upon comparing a paratype of *polita* Horn, the only species in the genus, kindly loaned him by the Philadelphia Academy, with specimens from his own collection that it was congeneric with *Nomaspis sublaevis* Horn. *Poreospasta* was founded upon old broken specimens. In those seen by Horn the lower blade of the claw was shorter than the upper. In old wind-blown specimens in the Van Dyke collection, some showed this condition, others this condition only as regards a few of the claws, the rest having the claws cleft and with both blades of equal length, while in fresh specimens, all of the claws were of this latter type. This being the case, it was felt that now that *Nomaspis* had to be abolished because of the removal of its genotype, the remaining species, *sublaevis* Horn, which was shown to be congeneric with *Poreospasta polita* Horn, should be associated with this latter, the genus *Poreospasta* be redefined and placed with the two species where it properly belonged after *Lytta*. Thus the tribe Meloini as a group of wingless genera would be abolished, the name because of its priority applied to the tribe now known as the Lyttini and all of its elements placed elsewhere as stated above.

In Doctor Van Dyke's paper, these various wingless genera and their species will be discussed in detail. The genus *Meloe* will in particular be very carefully revised, a number of new species described, the old ones carefully redescribed, synoptic tables drawn, and so forth. Other interesting facts were touched upon in the report, such as their distribution, habits and peculiar structural details. Many of these, it is hoped, will be included in the final paper.

Professor Doane, in response to an inquiry regarding the function of the antennæ of insects, stated that they are olfactory in function, but he did not know what was the significance of the enlargement or deformity of those of males of certain species.

Doctor Van Dyke remarked that while the antennæ were olfactory in function, the modification of the third joint is purely sexual and is for clasping the antennæ of the female during mating.

Mr. Martin asked if there is enough known about the early stages of the Meloini to permit of the correlation of the species. Doctor Van Dyke responded in the negative. The species are parasitic on the eggs of grasshoppers. Mr. Martin stated that he once had found the triungulin of *Tricrania* on the underside of a rock. Mr. Wallace remarked that the triungulin gets on the flowers and from there on to the bees when they visit the flowers.

Doctor Van Dyke closed the discussion by stating that *Lytta* scattered its eggs on the ground. The wingless species of the Meloidæ are hard to work out on account of the paucity of characters. The winged species are much easier as they have definite characters.

Mr. Van Duzee spoke again of his and Mr. Martin's trip to Arizona and reported on the moths taken, about 5000 in number. He exhibited a box showing the general character and appearance of those collected.

Mr. Fox then passed around a box of specimens of bees of the genus *Nomada*, stating that the specimens were collected by himself around upper Klamath Lake, Oregon, during the months of May and June, 1924.

The bees of this group live at the expense of other bees, principally of the genera *Andrena* and *Halictus*. The *Nomada* enters the burrow of its host and deposits eggs in the provision cell. The *Nomada* larva on hatching feeds rapidly with the result that the host larvæ die of starvation. The species of *Nomada* are small bees with nearly naked bodies, with the hind legs simple and unfitted for collecting pollen, especially those forms having the abdomen yellow and black banded. The species exhibit a great deal of variation in color and also in wing venation, being difficult to separate. Up to the present time there are 354 described species, subspecies and varieties from America north of Mexico.

Mr. Martin then gave a talk on the species of the hydrophilid beetles belonging to the genus *Hydrochus*, remarking that the species of this genus do not turn up very frequently in the collectings of California Coleoptera and that it is desirable that those who collect aquatic insects be on the lookout for them. They are found clinging to the under side of submerged sticks and will sometimes be taken in the net while dredging the weedy bottoms of ponds and pools. During the summer of 1923, while on a trip to the higher levels of Nevada County, he took two specimens from a small lake at about 7000 feet elevation, which seem to belong to an undescribed species. Careful and extended search failed to turn up any other specimens and he has never found these beetles common in any of his experiences. He stated that only two species are recorded from California and yet single specimens that he has seen and noted in local collections indicate that there are still others to be found.

Mr. Walther followed with remarks regarding an insect in-

festing the Australian plant, *Casnarina stricta*. He exhibited some twigs of the plant and asked if any one was acquainted with the insect. He submitted the specimens to Doctor Blaisdell for observation.

Mr. Charles Woodworth of Modesto Junior College reported as to the work which is being done at that college. He stated that with a class of four students in elementary entomology he was making a seasonal and district collection from an area twenty by twenty-five miles in extent in the lower San Joaquin River district. This area extends from the San Joaquin River to Empire and from Salida to Turlock. The collection is general in nature and is to be housed at the junior college. The students are enthusiastic and are making this collection in addition to the regular elementary course in entomology. The collecting trips are arranged along ecological lines. It is expected that many rare forms will be found and a good general survey of a little worked area will be made.

Doctor Blaisdell then spoke regarding Casey's *Eleodes subcylindrica* and exhibited a pair of specimens. He stated that at the time the Monograph of the Eleodini (Bull. 63, U. S. Nat. Mus.) was written, three species of *Eleodes* were not at hand and that *subcylindrica* was one of these. In 1909 he had the opportunity of visiting Colonel Casey in Washington and of examining a number of his types, and carefully noted those of *subcylindrica*. During a period of thirty years' collecting in southern California and northward, and after examining hundreds of specimens for other collectors, he had never met with the species until within the last five months, during which time two specimens had come to hand. One was taken by Mr. Warwick Benedict near Indio in California; the other was collected by Mr. George Field of San Diego in the Imperial Valley. It is a good species. It is characterized by its subcylindrical form, in habitus resembling *Eleodes armata* Lec., but having the middle and hind femora mutic; it is alutaceous in luster.

This was followed by a review and discussion of Comstock's new work on entomology by the several members.

Professor Doane then stated that the publication of a Handbook of the Insects of California, or of the Pacific Coast was a possibility. That he had had a talk with President Wilbur of Stanford University who stated that the funds would be supplied for publishing the work, should it be prepared. It is to follow in the footsteps of the Insects of Connecticut. That one order at a time would be considered and the whole would require a number of years for completion.

A number of the members concurred regarding the value of such an undertaking and thought that it should be done. There was some objection expressed on account of the unsettled condition of many groups. It was agreed that perfection was out of the question at any time as views are constantly changing and

it was thought best to go ahead and achieve as much as conditions would permit. Some of the coleopterists were pessimistic regarding such a complex as the Staphylinidæ.

After considerable discussion the meeting adjourned.

F. E. BLAISDELL, Secretary.

NINETY-SEVENTH MEETING

The ninety-seventh meeting of the Society was held on Saturday evening, March 7, 1925, in room 10 of the State Agricultural Department, Ferry Building, San Francisco, California.

President Van Dyke in the chair. Minutes of the preceding meeting were read and approved.

Fourteen members were present as follows: E. C. Van Dyke, E. O. Essig, F. W. Nunenmacher, George Wilson, Isabel McCracken, J. O. Martin, R. W. Doane, G. F. Ferris, Charles L. Fox, E. P. Van Duzee, F. E. Blaisdell, H. E. Burke, F. J. Spruyt and Vasco M. Tanner.

Eight guests signed the visitors' book: J. M. Miller, F. P. Keen, H. R. Jennings, L. B. Soliman, A. S. Hassan, L. M. Smith, P. N. Annand and Eric Walther.

Reading of the treasurer's report was dispensed with. Professor Essig then spoke on the finances of the "Pan-Pacific Entomologist," stating that it was all paid up to date and had 154 subscribers. That all members of the Society should act as a committee to get others so that the journal, if possible, should be put on a self-supporting basis. He also stated that Mr. Van Duzee was preparing a circular letter for a general drive for new subscribers and any member can obtain some of these from him. The secretary can circularize other Entomological Societies. The different journals have a varying subscription list, the "Journal of Economic Entomology" having about 1500 subscribers.

Doctor Van Dyke then took up the subject of the meeting of the Pacific Division of the A. A. A. S. and its affiliated societies to be held at Reed College, Portland, Oregon, on June 17 to 20, of this year. That efforts are being made for our Society to participate, and if possible, to have Professor Melander prepare the program there. He stated that there would probably be several members of our Society who would attend and that Mr. Van Duzee and he intended to go. Mr. Van Duzee could act as secretary *pro tempore* in the absence of Doctor Blaisdell, the Society's secretary.

Professor Essig asked if the forestry men would participate in the program. Mr. Miller and Mr. Burke thought it possible and stated that they would take up the matter.

The death of Colonel Thomas L. Casey was announced and Doctor Blaisdell was called upon to read a biographical sketch of his life and works. After the reading of the paper Professor Essig moved that the biographical sketch be published in the journal. Being put in the form of a motion, it was seconded, put to vote and carried.

Mr. Nunenmacher moved that a copy be sent to Mrs. Casey and the members arise to their feet for a moment with bowed heads in respect and memory of Colonel Casey. This was done.

Doctor Van Dyke then announced that the program of the evening would be taken up and called on Mr. Burke to open the symposium on "The Entomological Future on the Pacific Coast."

Mr. Burke then took the floor and spoke as follows on "The Future of Forest Entomology on the Pacific Coast":

Pacific Coast forest entomology of the past was a study of forest insects primarily as insects. Taxonomy and life history furnished the principal problems to be solved. It was the entomology that most of us of the Pacific Coast Entomological Society appreciate and enjoy. If we can judge of the future by the present, Pacific Coast forest entomology of the future will be almost everything but the entomology of the past. Ecology, physiology, silviculture, meteorology, plant physiology, biomathematics, chemistry, physics, mechanics and economics will furnish the problems to be solved.

The forest entomologist of the past collected the insects from their host trees, noted the stages found, whether the insect was killing the tree or not, and whether it was scarce or abundant. The forest entomologist of the future will pay scant attention to the insect. The tree and the forest which it and its fellows compose will be far more important to him. He will note the site conditions, crown class, annual ring growth, and any other features which will give him a good insight into the physiological condition of the tree. He will study the past history of the forest to determine under what conditions it grew, which may give him a clew to the probable cause of the insects' presence. Possibly by some elimination, or addition of tree species, he can make conditions more favorable for the trees, or less favorable for the insects. He will study the meteorological conditions, possibly sun spots, to determine whether or not the climatic cycle indicates favorable conditions for tree growth, and therefore a probable good time for control work; or unfavorable conditions for tree growth and a probable waste of money if control work is carried on.

This conception of the forest entomology of the future does not mean that there will be no need for the taxonomist, nor problems for the specialist in life histories. Far from that. Many knotty problems in the taxonomy of adult forest insects still confront us, and the taxonomy of the immature stages is practically undeveloped. We also know very little of the life histories of many of the insects that will be the important enemies of the forests of the future. In the past barkbeetles have been considered the most important of all forest insects. Probably they are at present, but lepidopterous and hymenopterous defoliators are becoming important, and in the future second growth forests we may expect them to be the most important. Barkbeetles and scales or aphids will probably follow closely in the amount of damage done. My conception of the forest entomology of the future does mean, however, that the great majority of the

problems which will arise will have to be solved by others than those whom we now consider forest entomologists.

The present organization of the Western Division of the Forest Insect Investigations of the United States Department of Agriculture is a good illustration of what we may expect in the future. Two of the twelve men which compose the force have degrees in Entomology, one in Zoology, two in Forestry, one in Agronomy, while six, exactly half, have no degrees, but were chosen for their practical ability as woodsmen or as managers of men.

Consider the fifteen projects under which the work of these men is carried on. Three projects, viz., Parasites and Predators, The Lead Cable Borer, and Defoliators, deal primarily with insects. Twelve projects, viz., Analysis of the Effect of Artificial Control, Economics of Control Management, Possibility of *Dendroctonus* Extermination, Possibility of Developing Better Control Methods, Possibility of Maintenance Control, Relation of *Dendroctonus* Outbreaks to Current Annual Yield, Periodicity of Epidemics and Possibilities of Forecasting, Brood Mortality of *Dendroctonus* Beetles, Relation of Growth Conditions and the Vitality of the Tree to Primary Attack by Barkbeetles, Interrelations of Insects and Fires, Relation of Slash to Insect Damage to Standing Green Trees and Relation of Insects to the Disintegration of Slash, deal primarily with factors other than insects.

In the judgment of the writer, the two most important forest entomological problems of the future are the determination of why insects attack trees, and the determination of a substance, or of substances, which will prevent them from making this attack.

The Western Pine Beetle, *Dendroctonus brevicomis*, probably destroys more valuable timber than any other insect on the Pacific Coast. In our principal pine belts it attacks only the yellow pine. It does not attack sugar pine, jeffrey pine, mountain white pine, white bark pine, knob cone pine or pinyon. If we knew the exact chemical substance which causes this beetle to select only the yellow pine instead of the sugar pine or jeffrey pine, we might spray the trunks of jeffrey pine and sugar pine with it and trap the beetle into trees in which its broods could not develop. At the very least, we should be able to get the beetle to attack the stunted and worthless yellow pine trees and pass by the most valuable ones. The attacked trees could then be treated and the control conducted without serious loss to the stand.

On the other hand, if we knew a real repellant substance that would absolutely prevent attack, or even prevent attack in the majority of cases, we could spray trees of special value and save them from the insect. Such trees are those found around summer resorts and recreational grounds in scenic localities and the

better trees in the timber forest. Sad to state, in many cases, it is these valuable trees that are more apt to be attacked by the destructive insects than those more common ones of less value.

Take for instance the trees of special value because of the location of summer resorts or recreational grounds. One of the main reasons such a site is chosen is the beauty of the stand of timber surrounding it. A summer home or a hotel is built among the trees. The cutting of the timber or the bringing in to it of freshly sawn lumber attracts the beetles. They kill the trees and the forest entomologist is called in for advice which at present he does not have. So far as the writer can see the only hope of help for trees of this class is the development of an efficient repellent.

Which are the most valuable trees in the timber forests? Are they not those old monarchs with their thousands of feet of clear lumber? They are slow growing or possibly not growing at all, but they are reservoirs of the most valuable timber which we have today and which we probably will never be able to replace. Possibly because of their slow growth, or for some other unknown reason, they appear to be particularly attractive to the beetles. The largest yellow pine the writer ever saw had been attacked and killed the year before by the Western Pine Beetle, and the largest sugar pine was being attacked by the Mountain Pine Beetle and probably died within the next three years. Again we can say with some assurance that if an efficient repellent was developed the timber owners would be glad to use it on their trees of special value. It is from these trees that they get their profits. The way the price of timber is apt to raise in the future it will not be very long before many of our Pacific Coast yellow pine and sugar pine will be valuable enough to treat providing we develop an efficient repellent at a moderate cost.

The development of an efficient attractant and of an efficient repellent, two problems which appear to be typical of the forest entomology of the future, will take other than the forest entomologist of the past to solve. Either the entomologist must develop into a chemist, a forester, or what not, or the chemist or forester will carry on the forest entomological work of the future.

In closing it should be of interest to the members of the Pacific Coast Entomological Society to speculate for a few minutes on this question, Who is going to carry on the forest entomology of the future? The problems will be many. Who is going to solve them?

Twenty years experience in close contact with Government, State and University entomologists leads the writer to believe that the deeper problems of the future will never be solved by them. Where the work depends on the appropriation of public funds for its maintenance, the uncertainty of its continuance and the demand for immediate results are so great that only the super-

ficial problems will be attacked and solved. The only hope appears to be to influence some great philanthropist to endow a research institution such as the Rockefeller Foundation or the Carnegie Institution. Insects as a whole are so important to the welfare of the human race that it is reasonable to suppose that sooner or later some great public benefactor will endow a real entomological research institution. Then, and only then, will the basic problems in forest entomology or in any other entomology be solved.

The paper was discussed by Mr. Miller and Mr. Keen.

Professor Essig then spoke on "Economic Problems and Work."

Discussed by Professor Doane, who said: "I do not think that I can add much to what has been said. The earlier economic entomologists like Harris, and others, all had their troubles and found a way for meeting them. Some of the older methods of control are as good or better than more recent ones. Ideas regarding fumigation differ from year to year. New developments for combating are constantly arising and new insecticides are being tried out. A study of pests along ecological lines must be made, as some of these develop at a lower temperature than the host, or the parasites work at a lower temperature than that of their hosts. A study of why one kind of tree attracts certain species more than others, as the apple tree rather than the apricot tree. Perhaps the physiological status of the tree has something to do with it, one of low vitality being more vulnerable to attack than one that is healthy and resistant. The question of attractants and repellants were referred to. On the Stanford Campus three species of *Ips* have been found, namely: *radiatæ* Hopk., *plastographus* Lec., and *confusus* Lec. Ten years ago only two species were found attacking the Monterey pines on the campus, *Ips plastographus* and *I. radiatæ*. About four years ago *Ips confusus* was first found on the campus and it has almost entirely replaced the other two species. Although many dead and dying trees have been examined during the past fall and winter no *Ips plastographus* and very few *Ips radiatæ* have been found. *Ips confusus* is very abundant and doing much damage."

Doctor Van Dyke discussed the fluctuation of species.

Professor Ferris was then called upon to consider Systematic Problems and Work and spoke as follows:

"We may assume that systematic entomology will continue to be a necessary part of our entomological activities and no time need be spent in trying to prove this further. However, I am convinced that if it is to do its share in future developments it must be of a sort radically different from most of the systematic work that we have had in entomology in the past. The time has arrived for a definite break with the methods that have usually been followed.

"We have been content with systematic work that only goes part way. It has purported to describe insects in order that they may be recognized and yet a tremendously large proportion of the named species can not be recognized with anything approaching definiteness from the descriptions. The Coleoptera are regarded as probably the best known order of the insects, with the possible exception of the diurnal Lepidoptera, yet the coleopterists have been content to leave at least a third of the structures on these insects unexplored, undescribed and unused. There has been too much of the point of view that regards a specimen as something to be preserved on a pin and never dug into. The same is true in other groups as well.

"Different methods of remedying this condition may be advocated. Personally I consider that the verbal description can never give us the degree of definiteness that we need and that we must rely upon figures. These figures should be based upon the same conceptions of accuracy and should be for the same purpose as are the blue prints of an architect or a machine designer. It should be our aim to do our work in such a way that it does not need to be done over again, at least as far as fact-finding is concerned. It should be done in such a way that the economic entomologist and others can use it and rely upon it as a point of departure for their own work."

Professor Ferris' paper was discussed by Blaisdell and Martin as given below.

Blaisdell: "There is an immense amount of systematic work to be done before anything ideal can be attained. I agree with Professor Ferris regarding morphological studies for they are invaluable and their recording in the form of prints, plates or charts are an absolute necessity. Such studies are only one of several that should be made, for ecological, physiological and chemical studies are equally important for fixing the final status of a species.

"It would be ideal if it were possible to have photographs of all parts of an insect, showing form and sculpturing as well as variations; the details of pubescence, punctuation, angles, sinuses and degrees of arcuateness could be shown free from error due to any personal equation of the student. What is the ultimate value of such exactness? In my Monograph of the *Eleodiini* I tried to approach some such methods, but the cost of reproduction staggered me as well as the publishers. This method of study is not practical as long as the financial status is deficient.

"Again, morphological characters if internal are not available to the student, amateur or professional, for identification of any given specimen or species without dissection. Such characters may be of value as establishing the status of a species, but those of a single type specimen if figured are not sufficient to ensure the infallible recognition and placing of specimens in the taxonomic scheme. Variations have to be taken into consideration, and this

is where our present system of synoptic tables and descriptions fall short.

"An amateur or professional student in dealing with the species of a large genus, must give sufficient time to the study of the characteristics of the genus and different species, by an intensive study of individual specimens to get oriented as it were. It takes hours to become proficient in the application of synoptic characters and identification of species of such large genera as *Bembidion*, *Pterostichus*, *Trichochrous*, *Listrus* and *Eleodes*. This not only applies to the Coleoptera but to all other orders. 'Blue prints' showing the arrangement of setæ, no doubt, would be of great help in identifying species of the Coccidæ and Diptera; in Coleoptera and Hemiptera they would prove worthless unless the differences in degree of punctuation, curves and angles were noted with their degrees of specific variation.

"In my opinion if all of the above aids were developed we would still have trouble. We would have to become acquainted with the morphological characters of each specimen, degree of variation and subdue the personal equation before proficiency could be ours."

Martin: "Destructive criticism of the work of our pioneer entomologists is very easy in the light of our later day knowledge; but we must not overlook the fact that these men were then engaged in the enormous task of bringing order out of a chaos of unknown facts and that they were for the most part purely amateurs who had to earn a living and who engaged in this work because of their love for it. There is no doubt but that some of this systematic work was very inadequate as most systematists have found, yet as the work of monographing and revising progresses, many of these difficulties will be ironed out. It does not seem to me that any part of this work, however poor, can be abandoned and even today with all of the universities assisting we find work that is far from perfect."

Further discussion by Ferris, Van Duzee and Doane.

Mr. Nunenmacher asked to be permitted to speak on the subject of different species of *Epilachna* (Coleoptera: Coccinellidæ). He exhibited the different species in large series.

Mr. Van Duzee then spoke on the subject of entomological repositories and museums.

Doctor McCracken spoke of collaboration of work and of lack of literature as a handicap to good work, and the value of large collections such as that being built up by the California Academy of Sciences, for reference and their accessibility to students of entomology.

Mr. Wilson talked on some problems from the quarantine standpoint.

After the viewing of some exhibits and general discussion the meeting adjourned.

F. E. BLAISDELL, Secretary.

OBITUARY

Mrs. Marie Fuchs, widow of Carl Fuchs, entomologist, passed away on April 5, 1925, at the Altenheim, 1720 Hopkins Street, Oakland, California. The immediate cause of death was croupous pneumonia. The remains were cremated at the Oakland Crematory. Mrs. Fuchs was 74 years old and entered the Altenheim on November 1, 1923.

BIOGRAPHICAL NOTES

Mrs. Fuchs' maiden name was Marie Debold. She was born in 1851 in New York City and lived on Third Street between B and C. She attended the German Catholic School in that city. Was married to Mr. Fuchs in 1867 and they lived in New York until they went to Europe in 1875. On their return to the United States they moved to California in 1884, residing in San Francisco up to the time of the great earthquake and fire, after which they moved to Alameda.

After the death of Mr. Fuchs on June 13, 1914, she lived with her cousin, Mrs. B. Shoepf, who lives at 2146 Lincoln Avenue, Alameda. Mrs. Fuchs is survived by a sister and brother. The sister, Mrs. Kate Gabel, resides at 33 Thorn Avenue, Hempsted, Long Island, New York. Her brother, Fred Debold, lives at 959 Park Street, Alameda. Mr. Debold is a jeweler by trade and came to San Francisco from New York on advise of Mr. Fuchs. He obtained work with the firm of Rothschild and Haydenfelt, wholesale jewelers. After the earthquake and fire he went to work for Granett Brothers on Mission Street, San Francisco, and later employed by Shreve and Company, where he works at the present time.

Mrs. Fuchs was a devoted wife and helpmate and took much interest in the Coleoptera. For farther facts the reader is referred to "In Memorium: Carl Fuchs," published in the proceedings of the "California Academy of Sciences," fourth series, volume viii, No. 2, June 17, 1918, pp. 27-34.

NINETY-EIGHTH MEETING

The ninety-eighth meeting, or field day, of the Society was held in Mill Valley, Marin County, California, at the country home of Mr. and Mrs. E. P. Van Duzee, on Eldridge Avenue, on Sunday, May 24, 1925.

The following members and guests participated in the outing: E. P. Van Duzee, Charles L. Fox, G. W. Merritt, Mrs. G. W. Merritt, Miss Elizabeth Nussbaum, Master Edgar Sutro, E. C. Van Dyke, Mrs. E. C. Van Dyke, Doctor Ernest H. Nast, U. S. Grant IV, F. J. Spruyt, Doctor J. F. Killeen and Doctor Louise Killeen.

The weather was perfect and all enjoyed collecting or social discourse in camp.

Mrs. EDWIN C. VAN DYKE, Secretary *pro tempore*.

NINETY-NINTH MEETING

The ninth-ninth meeting, or affiliation meeting, of the Society was held at Reed College, Portland, Oregon, June 17, 1925. President Van Dyke in the chair.

Forty members and visitors were in attendance as follows: Miss Alice Eastwood, Miss Alice P. MacDougal, G. J. Spencer, P. G. Putnam, Anthony Spuler, Ralph Hopping, W. J. Chamberlin, A. L. Melander, L. P. Rockwood, M. C. Lane, Sadie E. Keen, Max M. Reeher, George I. Reeves, Mrs. R. Bruce Horsfall, Thomas P. Chamberlin, E. R. Buckell, Stanley B. Freeborn, Eubanks Corsner, E. Lazier, E. J. Newcomer, C. K. Fryher, E. A. Hack, A. O. Larson, Edwin C. Van Dyke, W. B. Herms, E. P. Van Duzee, Walter L. Richardson, William Richardson, Helen Richardson, Mrs. Walter L. Richardson, Miss Nettie M. Cook, A. J. Jaenicke, William Downes, F. H. Wymore, Doctors F. C. and Louise Killeen, and others.

The following papers were read and discussed:

A. J. Newcomer: Habits of a Digger Wasp (*Psammophila caerulea*).

W. B. Herms: Entomological Observations on Fanning and Washington Islands.

In the discussion Doctor Van Dyke remarked on the Coleoptera taken by Professor Herms. Professor Herms stated that insects of these islands most nearly resemble those of the Society Islands. Illustrated.

E. O. Essig: Publication of a Book on Western Insects.

Read by Professor Herms.

A. L. Melander: Collecting Insects on Mount Rainier. Illustrated. Remarks by Miss Eastwood, Doctor Van Dyke and Mr. Hopping.

Ralph Hopping: Slash and the Beetles Found There. Illustrated.

The chairman appointed A. L. Melander and E. P. Van Duzee to represent the Society at the affiliation meeting to be held at 4 o'clock.

Meeting then adjourned until 2 p. m. when the program was continued as follows:

E. C. Van Dyke: Certain Peculiarities of the Coleopterous Fauna of the Pacific Northwest.

Discussed by Miss Eastwood, Professor Freeborn and others.

A. L. Melander: What are Type Specimens?

Discussed by Van Duzee, Freeborn and Van Dyke.

E. P. Van Duzee: The Preparation of Insect Descriptions for Publication.

G. L. Reeves: The Alfalfa Weevil.

A. J. Jaenicke: Forest Insect Situation of the Pacific Coast.

Read by Professor Van Dyke.

G. J. Spencer: An Ear-Wig New to British Columbia.

The manuscript having been given to the secretary is given in full as follows:

AN EAR-WIG NEW TO BRITISH COLUMBIA

In view of the fact that the European ear-wig is occupying so much attention in the cities of Portland and Vancouver at present, it seems timely to mention the occurrence in British Columbia, of a species of ear-wig hitherto unrecorded in that province and, so far as I can ascertain, in Canada and the Pacific Coast States of America.

The species and distribution of ear-wigs hitherto recorded in Canada are as follows:

1. *Euboriella annulipes* Lucas.
Size, 9 to 10 mm. Vancouver docks.
2. *Labia minor* Linn.
Size, 4.5 mm. Salmon Arm and Vancouver Island.
3. *Doru aculeatum* (Scud.).
Size, 7.5 to 11 mm. Toronto, Ontario.
4. *Forficula auricularia* Linn. and *var. forcipata* Steph.
Size, 12 to 18 mm. Vancouver and vicinity. Victoria.

In the vicinity of the Pacific Biological Station, Nanaimo Vancouver Island, are many large and small islands. One day I was grubbing for ants on one of the latter called Snake Island, situated three miles from the mainland of the island, and discovered many specimens of an ear-wig of truly noble proportions—some female adults being 30 mm. in length, a full 10 mm. longer than any of the others I have just mentioned. In color, the dorsum of small ones is dark brown and in large adults it is very dark chestnut brown. The number of joints in the antennæ varies according to the instars, ranging in specimens I have examined, from 16 in nymphs to 24 in large adults. Short recurved male and long pointed female cerci readily serve to distinguish the sexes. Moreover there are six female and eight male, abdominal sterna, typical of the ear-wigs. Both males and females are wingless; the latter greatly outnumber the former.

Distribution and Habitat.—These insects live in what I may call the Orchestia or Amphipod region of high-tide marks, in coarse damp gravel under masses of seaweed and flotsam. They rarely occur in dry gravel and not at all in sand, or sand and pieces of old shells. Under or alongside a log partly embedded in coarse gravel, is a favorite hiding place and apparently the main breeding place because this is where the large females and small nymphs are to be found. (They were first discovered on April 24, 1925.) Their distribution seems to be very limited. On the island where they were originally found they occupy an area of not over fifty square yards in a narrow strip; just near the

biological station they occur over a small area perhaps thirty yards long—and not on either side of it. On an island just in front of the station I found one under a dry plank on a dry bank—the only occasion where a damp place was not favored. I have looked for them at a few intervals between points six miles east and fifteen miles west of the station, without finding any. It is very likely, though, that they occur in limited areas in the neighborhood of Nanaimo. Questioned as to whether he had ever seen such insects before along the coast, a middle-aged native son of the province declared that he had seen them thirty years ago eastward on the island. His description of the insects he had known long ago was such an excellent mixture of the larva of a Carabid, an adult Staphylinid and an ear-wig, that I hesitate to declare it the authentic record of an ear-wig, and especially of the species in question.

Will this insect be of economic importance? Since its habitat seems restricted to high-tide debris, on coarse gravel, I doubt if it will become a pest unless around warehouses and buildings on the shore line. Its food seems to consist of various types of dried seaweed.

The identity of this insect. I am not absolutely sure of its identity, but the 24-segmented antennæ, apterous condition, size and general color, point to its being *Anisolabis maritima* G  rr  , the Sea-side Ear-wig, hitherto unrecorded in Canada and apparently recorded in the United States only on the Atlantic Coast from Maine to Texas. I have carefully compared its morphology with Yuasa's (1920) description of the head and mouth-parts of *Anisolabis maritima* and it agrees almost to the minutest detail. In size only does it exceed all records, the body alone of an adult female being 30 mm., a full 10 mm. more than what Comstock records for *maritima* and if the cerci are included, it is 35 mm. long. When I first found the insect I immediately took it to be an introduced Japanese form, because many Japanese fishermen have settled around Nanaimo—but the morphology of the mouth-parts entirely agrees with *Anisolabis maritima*. It may yet turn out to be an introduced Japanese insect.

Parasites on this insect. It is interesting to note that when dissecting one to find out the food taken I found a Tachinid larva of the first instar. A good number of the ear-wigs are being kept under cage observation to see if any flies emerge.